



Lean and Environment Training Modules

Version 1.0 – January 2006

[Next Page](#)



Lean and Environment Training Module 1

Getting Started with Lean and Environment

[Previous Page](#)

[Next Page](#)



Purpose of the Lean and Environment Toolkit and Training Modules

- » *Lean and Environment Training Modules* (Version 1.0)
 - Trains Lean leaders and environmental assistance providers on strategies and tools for integrating Lean and the environment.

- » *Lean and Environment Toolkit* (Version 1.0)
<http://www.epa.gov/lean/toolkit>
 - Illustrates how considering environmental goals and opportunities in Lean efforts can eliminate waste, improve quality, and maximize value delivered to the customer
 - Provides practical strategies and tools for integrating environmental considerations into Lean methods



Why Connect Lean and Environment?

- » Explicitly considering environmental goals and opportunities during Lean implementation can...
 - Reduce costs
 - Improve process flow and reduce lead times
 - Lower regulatory non-compliance risk
 - Meet customer expectations
 - Improve environmental quality
 - Improve employee morale and commitment



Key Questions

The *Lean and Environment Training Modules* address these questions:



- » What is environmental waste?
- » Why should I identify environmental waste in my process?
- » How will I know when I see environmental waste?
- » Where should I look for environmental wastes?
- » How do I measure the environmental impacts of a process?
- » Where can I find environmentally preferable process options?



The Business Case

1. Learn to see hidden environmental waste
 - Reduce costs
 - Reduce risk
2. Enhance the effectiveness of Lean implementation
 - Anticipate and ease constraints to applying Lean to monument processes
 - Improve process flow and reduce lead times
3. Deliver what customers and employees want
 - Satisfy customer preferences for environmental attributes
 - Safeguard company and brand reputation
 - Improve employee morale and commitment
 - Improve environmental quality



1. Learn to See Hidden Environmental Waste and Hazards

Lean's "Deadly Wastes"

1. Overproduction
2. Inventory
3. Transportation
4. Motion
5. Defects
6. Over Processing
7. Waiting



Where are environmental wastes?

- Excess materials use
- Pollution/emissions
- Scrap & non-product output
- Hazardous wastes



1. Learn to See Hidden Environmental Waste and Hazards, Continued

- » Significant environmental wastes are often missed when improvement initiatives only target the “**7 deadly wastes**”
- » Adding environmental wastes as an 8th deadly waste can reduce costs and risk
- » Environmental wastes are often a sign of inefficient production, and they frequently indicate opportunities for saving cost and time





2. Enhance the Effectiveness of Lean Implementation

- » Lean thinking can be applied to environmental management processes, such as chemical and waste management
 - Companies have found as much as 40 percent of chemical supplies went directly into hazardous waste, as they expired on the shelf or became obsolete
- » Proactive Lean and environment coordination can anticipate and ease environmental and regulatory constraints to Leaning “[monument](#)” processes
 - This can improve flow, reduce lead times, and mitigate health and safety risks



3. Deliver What Customers & Employees Want

- » Companies that deliver products and services with fewer environmental impacts have the potential to capture significant competitive advantage, provided that there are not sacrifices in time, quality, or cost
- » Products with superior environmental performance can attract new customers
- » Considering environmental waste in Lean initiatives can improve the work environment for employees



TO CONSIDER

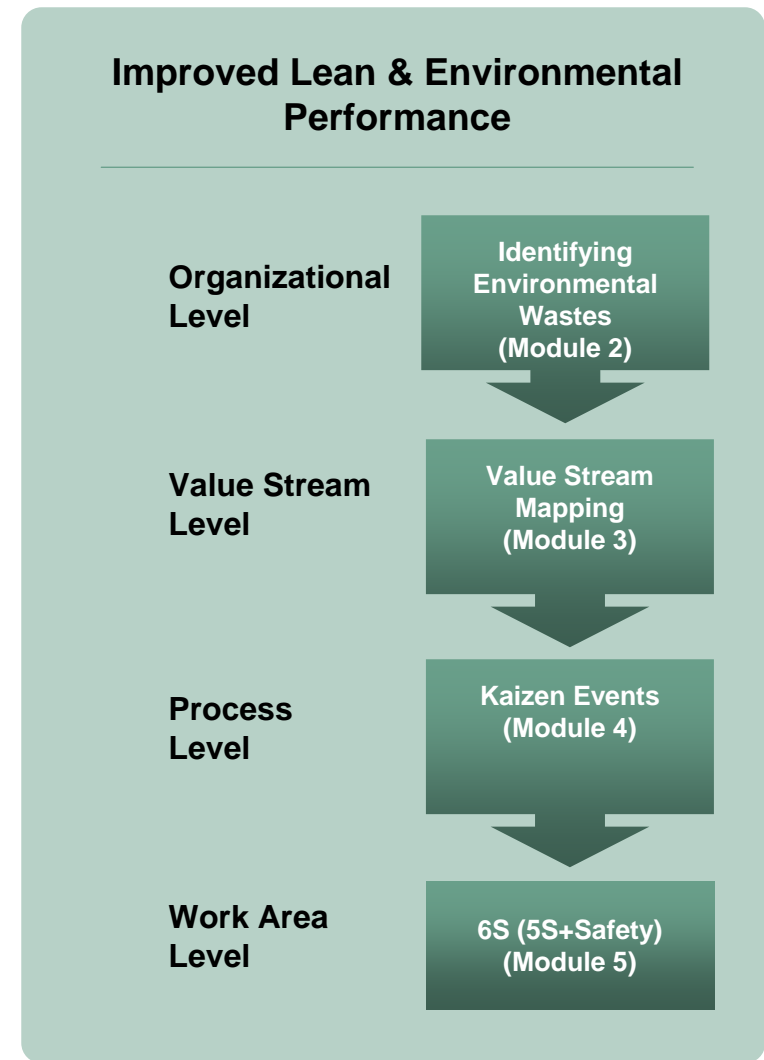
- » How could your company benefit from improved Lean and environmental performance?
- » How well coordinated are Lean and environmental management activities in your organization?
- » Do environmental, health, and safety personnel participate in Lean events and initiatives at your company?





Lean and Environment Training Modules

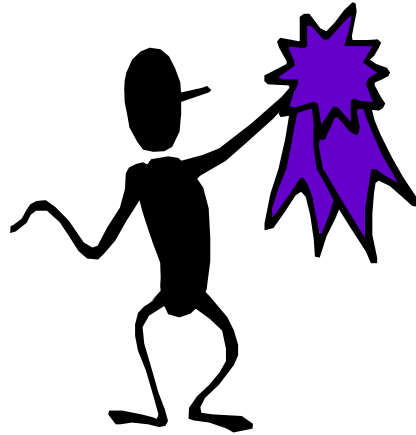
- » Version 1.0 includes 5 *Lean and Environment Training Modules*
- » Each module addresses integration opportunities at a different organizational level
- » The modules can be used independently or as a whole
- » Click on the links at the bottom of some slides to find additional information





Acknowledgments

- » EPA thanks its Lean & Environment Partners for their help developing the Training Modules and Toolkit
 - » Baxter International
 - » Chicago Manufacturing Center
 - » CONNSTEP, Inc.
 - » HNI Corporation
 - » Robins Air Force Base
 - » Rockwell Collins
 - » U.S. Army Materiel Command
- » The Training Modules and Toolkit were prepared for EPA by Ross & Associates Environmental Consulting





Lean and Environment Training Modules

- » Module 2: Identifying Environmental Wastes
- » Module 3: Value Stream Mapping
- » Module 4: Kaizen Events
- » Module 5: 6S (5S+Safety)



Research on Lean & Environment: Evidence of Significant Opportunities

- » EPA is engaged in research, education, and tool development to help organizations to leverage greater environmental gains from Lean initiatives
 - For more information, see: www.epa.gov/lean
- » EPA research reports include:
 - Lean and Environment Report (Shingo Prize winner)
 - Boeing Case Study Lean and Environment Report
 - Lean and EMS in the Shipbuilding Sector Report
- » Download the reports from: www.epa.gov/lean/pubs.htm



What is a “Monument”?



» **Monuments** are production processes or process steps that:

- Have large equipment and/or other physical or environmental regulatory constraints
- Are very difficult or costly to move
- Can disrupt the flow sought through Lean

» Examples include:

- Painting processes with large fixed paint booths or dipping tanks
- Metal finishing processes with large tanks and/or fixed equipment